UNDERGROUND STORAGE TANK SYSTEM CLOSURE OUTLINE

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DIVISION OF WASTE MANAGEMENT
UNDERGROUND STORAGE TANK BRANCH
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601
(502) 564-6716
1-800-928-4273

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

UNDERGROUND STORAGE TANK SYSTEM
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(502) 564-6716 or 1-800-928-4273

1.0 INTRODUCTION

This document outlines requirements for owners and operators of underground storage tank (UST) systems regarding the documentation of permanent closure (by removal or closure in place) and regarding soil and water sampling to assess UST sites for permanent closure according to Kentucky Administrative Regulations 401 KAR 42:070.

The requirements for notification and for submission of information to the Underground Storage Tank (UST) Branch are applicable to every permanent closure of a regulated UST system. The Cabinet reserves the right to require additional information or sampling in order to clarify permanent closure documentation.

For definitions of terms used within this outline, refer to 401 KAR 42:005.

1.1 Regulated Petroleum UST Systems

This document shall be used in conjunction with the Petroleum Underground Storage Tank System Facility Classification Outline (Facility Classification Outline) incorporated by reference in 401 KAR 42:080, dated October 1995, which specifies actions and allowable constituent levels in soil and groundwater for permanent closure of regulated petroleum UST systems.

Requirements for additional documentation of closure activities (beyond those presented in this document) are presented in the Facility Classification Outline.

1.2 Regulated Non-Petroleum UST Systems

Sites with regulated non-petroleum UST systems shall conduct soil and water sampling in accordance with Sections 3.0 and 4.0 of this outline. Section 5.0 shall be followed for sample analysis requirements although, as indicated in Tables A and B (pages 13 and 15), the UST Branch shall be contacted for required methods, detection limits, and allowable constituent levels for soil and groundwater. Section 6.0 of this outline specifies the requirements for disposal and reuse of materials resulting from permanent closure.

1.3 UST Systems Not Regulated under 401 KAR Chapter 42

Closure requirements for UST systems that are not regulated under 401 KAR Chapter 42 may be obtained by contacting the Superfund Branch or the Hazardous Waste Branch at (502) 564-6716.

2.0 PERMANENT CLOSURE PROCESS

The permanent closure process records all activities associated with the permanent closure of regulated UST systems and requires the submission of specific documentation to the UST Branch. The requirements for notification and for submission of information are applicable to every permanent

closure of a regulated UST system. Required forms, appendices, and addenda submitted shall be complete and accurate. In addition, all information submitted shall comply with the following requirements:

- Include the UST facility identification (ID) number on each document submitted. If the number is unknown, contact the UST Branch, Administrative Section, at (502) 564-6716 or 1-800-928-4273; and

- Submit two (2) separate copies, or the original and one (1) copy, of each required document. An original signature shall be included on all Department for Environmental Protection (DEP) forms.

2.1 Notice of Intent

The permanent closure process shall begin with the submission of a completed Notice of Intent (NOI) to Permanently Close Underground Storage Tanks Form (DEP5025/07/95) to the regional office serving the county where the UST system will be permanently closed. This form shall be submitted a minimum of thirty (30) days prior to the permanent closure of a UST system(s). The NOI shall only be valid for twelve (12) months following signature by the tank owner or operator or their authorized representative. If this form is not submitted thirty (30) days prior to permanent closure, the facility shall be in violation of this regulation.

A listing of the regional offices may be obtained by contacting the UST Branch.

2.2 Regional Office Inspection

Schedule an on-site closure inspection by contacting the regional office serving the area where the UST system will be closed at least ten (10) day**s** prior to permanent closure. If the regional office is not contacted, the facility shall be in violation of this regulation. The function of the regional office inspector is to observe and document activities at the site during permanent closure or subsequent site inspections.

2.3 UST Systems Remover Certification Program

Effective April 1, 1991, in accordance with 815 KAR 30:060, permanent closure of any UST system shall be performed by a certified underground petroleum storage tank contractor. The State Fire Marshal's (SFM) office administers this certification program. Anyone performing UST system permanent closures or installations shall be certified by the SFM program, and proof of certification shall be supplied, upon request, to Division of Waste Management (DWM) representatives. The contractor's name, company name, and SFM certification number shall be indicated on the Closure Assessment Report (CAR) form (DEP4058/07/95).

For more information or for a list of certified contractors, contact the SFM office at (502) 564-3626.

2.4 Closure Assessment Report

The CAR form (DEP4058/07/95) shall be signed by a Professional Engineer registered with the Kentucky Board of Registration for Professional Engineers and Land Surveyors, or a Professional Geologist registered with the Kentucky Board of Registration for Professional Geologists and shall be submitted to the UST Branch within ninety (90) days following the permanent closure of a UST system.

3.0 SOIL SAMPLE COLLECTION REQUIREMENTS

Sites with regulated petroleum UST systems shall collect soil samples in accordance with this section if so prescribed in the Facility Classification Outline.

Sampling shall be conducted in accordance with 40 CFR 260.11, specifically per "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (United States (US) Environmental Protection Agency (EPA) Publication SW-846 (US EPA SW-846)) to ensure that a representative sample is collected. Soil samples shall be collected with a corer, a trowel, or a similar instrument (preferably made of stainless steel); however, if safety conditions warrant, samples may be obtained from a backhoe bucket. Recognized methods, in accordance with US EPA Standard Operating Procedures, shall be followed for decontamination of all sampling equipment. For information about the Standard Operating Procedures, contact the US EPA, Region IV, Environmental Services Division, College Station Road, Athens, Georgia 30613 or call (706) 546-3300.

The following steps shall be followed for collection of soil samples from the tank pit and piping trench areas:

1. All preparations for soil sampling shall be made prior to excavation activities.

2. When removing the tank(s) or piping, backfill material shall be excavated. Once all backfill material has been removed, excavation activities shall cease and initial soil samples shall be collected from the excavation zone.

3. Soil samples shall be collected within four (4) hours of removal of the tank(s) or piping or the termination of excavation activities. Soil samples shall be collected in accordance with Sections 3.1, 3.2, and 3.3.

4. Soil samples shall be properly preserved, delivered to the laboratory, and analyzed within seventy-two (72) hours of collection.

5. If analytical results indicate soil contamination levels are above those allowed in the Facility Classification Outline, continued excavation shall be permitted in intervals of up to 382 cubic meters (500 cubic yards).

6. Once up to 382 cubic meters (500 cubic yards) have been removed, excavation activities shall cease. At this time, additional soil samples shall be collected from the areas of the excavation zone which previously exhibited soil contamination levels above those allowed in the Facility Classification Outline.

7. Soil samples shall be collected in accordance with step # 3 and analyzed in accordance with step # 4.

8. If excavation of soil is to continue after analytical results of the initial sampling event have been received, the intervals of excavating and sampling (as outlined above in steps # 3, 4, 5, and 6) shall be repeated until the soils meet the contamination levels allowed in the Facility Classification Outline.

Note: if the excavated material is disposed of at a permitted landfill or landfarming facility and removed in accordance with Section 3.0, additional sampling beyond that required by the permitted disposal facility shall not be required. See Section 3.3 for additional information.

For alternative corrective action technologies to address elevated contamination levels in the soil and groundwater, refer to the Underground Storage Tank System Corrective Action Plan Outline incorporated by reference in 401 KAR 42:060.

Two (2) separate copies of all sample analyses shall be submitted with chain-of-custody (COC) documentation to the UST Branch as appendices or addenda to the CAR form. The sample analyses shall be grouped chronologically in the CAR (e.g. initial sampling, 1st excavation, 2nd excavation, etc.). All sampling locations shall be indicated on a site map(s) as an appendix or an addendum to the CAR form. Site maps shall be to scale and include a north arrow and a legend. All soil samples shall be placed into appropriate containers and analyzed for applicable constituents as required in Section 5.0 of this outline.

Soil borings shall be properly abandoned upon collection of samples and termination of borings. Properly abandoned is considered to be plugged, bottom to top, in a manner to prevent communication of surface water and groundwater, and communication between two (2) or more water-bearing zones through the boring.

3.1 Soil Sampling: Tank or Piping Removed from the Ground

The following subsections outline the procedures for the collection of representative samples from the tank pit and piping trench areas of UST systems to be removed from the ground. Refer to Section 3.0 for sampling procedures. Figure A (page 5) illustrates locations for sample collection as discussed in the following three (3) subsections. If soil samples cannot be collected as described, see Section 3.5 for deviations from sampling requirements.

3.1.1 Tank Pit Walls

Each 7.60 meter (twenty-five (25) foot) section of each tank pit wall shall be sampled in the following manner:

- Grid each 7.60 meter (twenty-five (25) foot) section of the tank pit wall as shown in Figure A (page 5); and

- Collect one (1) composite soil sample consisting of a grab sample from each of the four (4) portions of the grid; within each portion, sample where contamination is most likely to be present. Place samples into appropriate containers and have them analyzed at a laboratory.

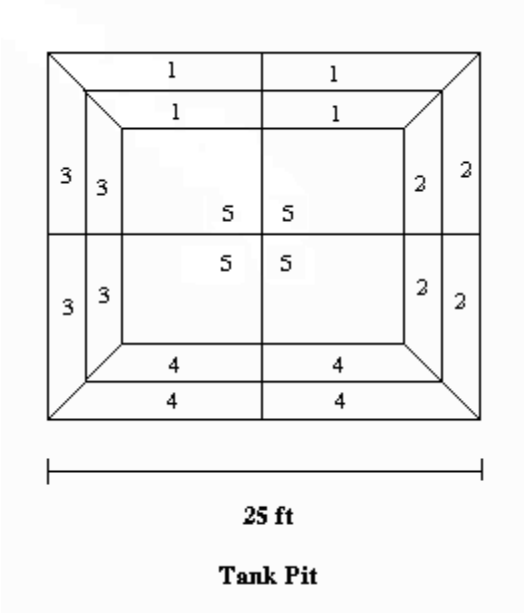
A separate container shall be used for each 7.60 meter (twenty-five (25) foot) section of each tank pit wall. If a tank pit wall(s) or a tank pit wall section is less than 7.60 meters (twenty-five (25) feet) in length, one (1) composite sample shall be collected and analyzed for the tank pit wall or the tank pit wall section.

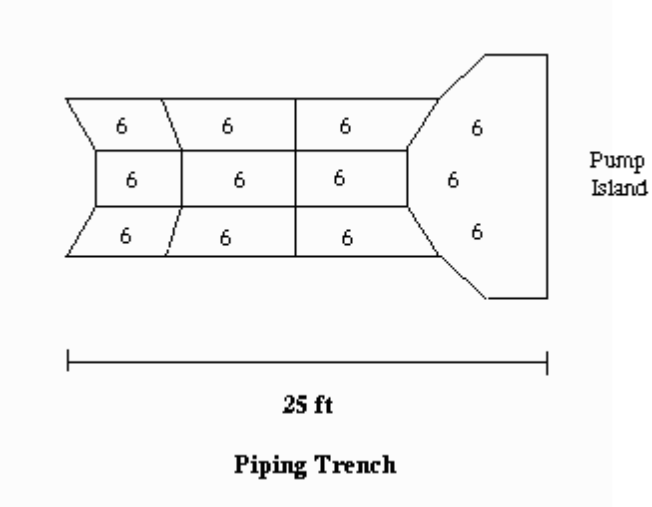
3.1.2 Tank Pit Bottom

Each 7.60 meter (twenty-five (25) foot) section of the tank pit bottom shall be sampled in the following manner:

Figure A

Soil Sample Locations - Tank or Piping Removed from Ground





1 - Grab sample location

- Grid each 7.60 meter (twenty-five (25) foot) section of the bottom of the tank pit area as shown in Figure A (page 5); and

- Collect one (1) composite soil sample consisting of a grab sample from each of the four (4) portions of the grid; within each portion, sample where contamination is most likely to be present. Place samples into appropriate containers and have them analyzed at a laboratory.

Use a separate container for each 7.60 meter (twenty-five (25) foot) section of the tank pit bottom. If the tank pit bottom or a tank pit bottom section is less than 7.60 meters (twenty-five (25) feet) in length, one (1) composite sample from the tank pit bottom shall be collected and analyzed for the tank pit bottom or the tank pit bottom section.

If bedrock is encountered and no bottom sample is collected, a hydrogeologically downgradient groundwater sample may be required. Refer to Section 4.2 for requirements for the collection of downgradient groundwater samples (for petroleum UST systems see the Facility Classification Outline).

3.1.3 Piping Trench

Each 7.60 meter (twenty-five (25) foot) section of the piping trench shall be sampled in the following manner:

- Grid each 7.60 meter (twenty-five (25) foot) section of the piping trench as shown in Figure A (page 5). The area under the dispenser island is considered to be part of the piping trench; and

- Collect one (1) composite soil sample consisting of a grab sample from each portion of the grid; within each portion, sample where contamination is most likely to be present. Place samples into appropriate containers and have them analyzed at a laboratory.

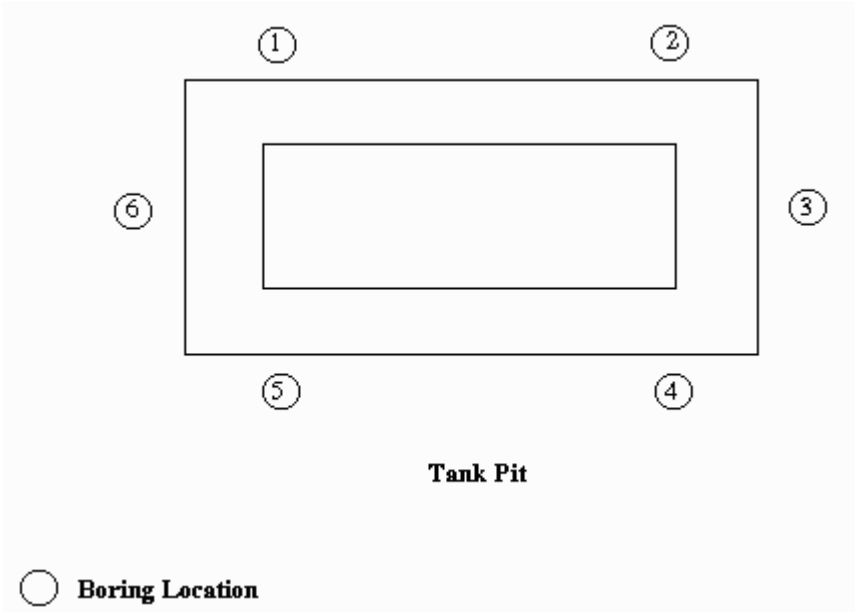
Use a separate container for each 7.60 meter (twenty-five (25) foot) section of the piping trench. If a piping trench or a piping trench section is less than 7.60 meters (twenty-five (25) feet) in length, one (1) composite sample shall be collected and analyzed for the piping trench or the piping trench section. If the total length of the piping trench is located within the tank pit excavation, no sample analysis for the piping trench is required, but a statement of explanation shall be included on the CAR form.

3.2 Soil Sampling: Tank or Piping Closed in Place

The following subsections outline procedures for the collection of representative samples from the tank pit and piping trench areas of UST systems to be closed in place or for the resampling of tank pit and piping trench areas of previously closed UST systems that cannot be re-excavated. Figures B and C (pages 7 and 8) illustrate locations for sample collection as discussed in the following two (2) subsections. If analytical results indicate soil contamination levels above those allowed in the Facility Classification Outline and the owner/operator chooses to excavate, refer to Section 3.0 for sampling procedures. If soil samples cannot be collected as described, see Section 3.5 for deviations from sampling requirements.

Figure B

Soil Sample Locations - Single Tank or Piping Closed in Place



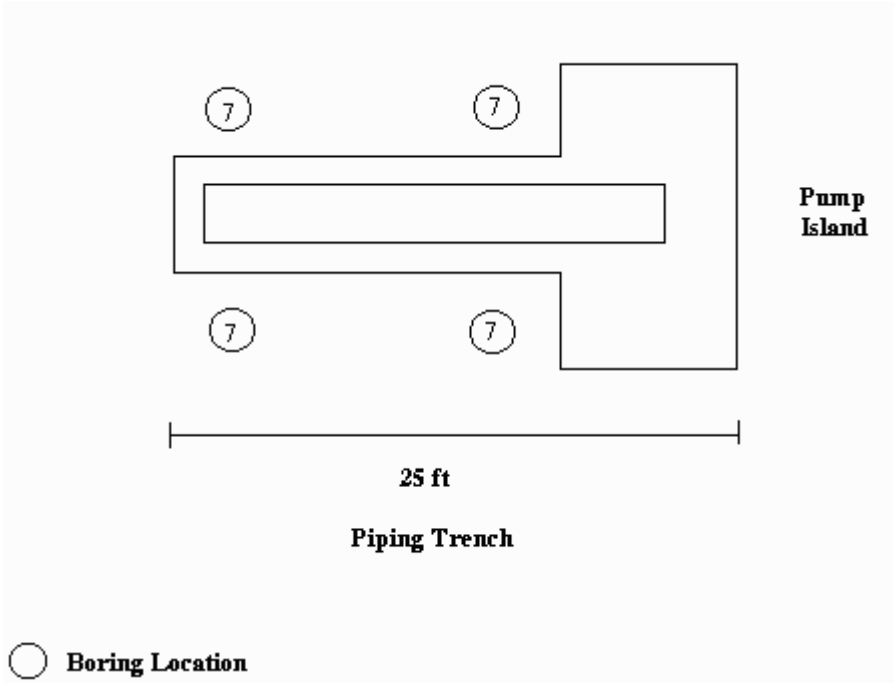
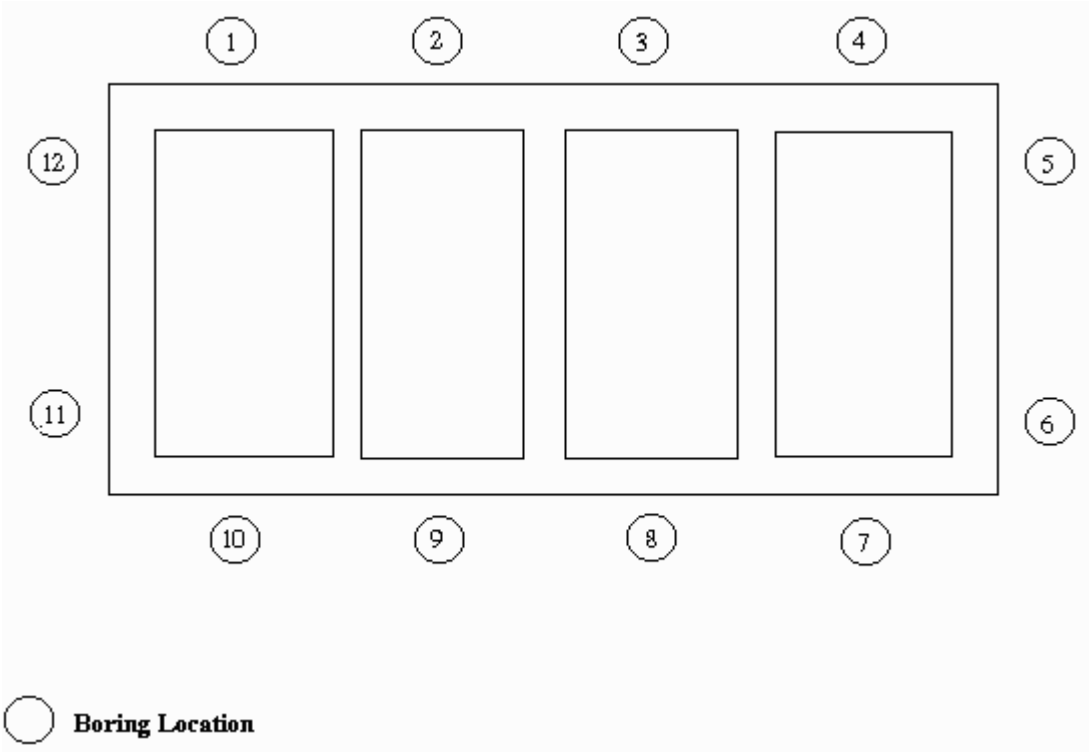


Figure C

Soil Sample Locations - Multiple Tanks Closed in Place



3.2.1 Tank Pit Area

The following procedures shall be followed to assess the tank pit area. Figure B (page 7) illustrates boring locations if one (1) UST system is to be closed in place. Figure C (page 8) illustrates boring locations if more than one (1) tank is to be closed in place.

- Perform soil borings in the native soils immediately adjacent to the backfill material at the ends and sides of each tank as shown in Figures B and C;

- Advance borings to a depth of at least 0.60 meters (two (2) feet) below the bottom of the tank. If bedrock is encountered in any boring prior to achieving the required depth, a hydrogeologically downgradient groundwater sample (see Section 4.2) shall be collected in lieu of a soil sample from the boring;

- A sample shall be collected from the boring at intervals of every 0.60 meters (two (2) feet) and evaluated using properly calibrated field instruments. Field instrumentation results and data documenting the proper operation and quality control procedures used during the operation of the field instrumentation shall be available upon request by the Cabinet but is not required to be submitted initially with the CAR;

- Select one (1) sample from each boring for laboratory analysis. This sample shall be from the location in the boring between the top of the tank and 0.60 meters (two (2) feet) below the bottom of the tank exhibiting the highest contaminant concentration using appropriate field methods (see paragraph above). If no contamination is exhibited throughout the boring using appropriate field methods, the sample from the bottom of the boring shall be submitted for analysis; and

- Place the selected sample from each boring into a separate, appropriate container, and have the samples analyzed at a laboratory.

3.2.2 Piping Trench Area

Each 7.60 meter (twenty-five (25) foot) section of the piping trench shall be sampled in the following manner:

- Divide the piping trench length into 7.60 meter (twenty-five (25) foot) sections. The area under the dispenser island is considered to be part of the piping trench; and

- Collect one (1) composite soil sample consisting of grab samples from the boring locations as illustrated in Figure B, for each 7.60 meter (twenty-five (25) foot) section. Samples shall be collected as close as possible to the piping, and borings shall extend at least 0.60 meters (two (2) feet) below the bottom of the piping trench. In each sample collection location, sample(s) shall be collected from areas where contamination is most likely to be present. Place samples into appropriate containers and have them analyzed at a laboratory.

Use a separate container for each 7.60 meter (twenty-five (25) foot) section of the piping trench. If a piping trench or a section of a piping trench is less than 7.60 meters (twenty-five (25) feet) in length, one (1) composite sample shall be collected and analyzed for the piping trench or a section of the piping trench.

3.3 Sampling of Excavated Material

The excavated material removed from the tank pit or piping trench shall be placed on and covered with plastic. Measures shall be taken to prevent any surface runoff from entering or washing away the excavated material (e.g. berms, straw bales, etc.). Sampling of the excavated material shall not be requested if the material is disposed of as directed in Section 3.0. Copies of the laboratory analyses required by the permitted disposal facility shall be submitted as an appendix or addendum to the CAR.

At least one (1) composite sample shall be collected for every 382 cubic meters (500 cubic yards) of excavated material removed from the tank pit or piping trench excavation if the material is to be returned to the excavation, used for an unrestricted off-site purpose, or treated on- or off-site through a registered permit-by-rule issued by DWM.

Each 382 cubic meters (500 cubic yards) of the excavated material shall be sampled in the following manner:

- Divide each 382 cubic meters (500 cubic yards) of excavated material into at least four (4) equal sections; and

- Collect one (1) composite soil sample consisting of a grab sample taken at least 0.30 meters (one (1) foot) into the interior of each of the four (4) sections of each pile. Within each section the sample shall be collected from areas where contamination is most likely to be present. Place samples into appropriate containers and have them analyzed at a laboratory.

Additional sampling as prescribed by the Cabinet shall be performed if the excavated material is improperly stored, if any degradation of plastic or runoff barriers occurs prior to disposal, or if any evidence of contamination is observed (e.g. fumes, odors, sheen on water, etc.) peripheral to the excavated material pile.

3.4 Background Sampling

If necessary to establish background levels for total lead constituents, soil samples shall be collected at a depth of 0.90 meters (three (3) feet) or more below the ground surface from five (5) separate locations which are upgradient and unaffected by a potential release of substances from the UST system being permanently closed. At least five (5) samples shall be collected and analyzed separately, one (1) from each section. Background levels shall be established by calculating the arithmetic mean of the analytical results obtained from the background samples. Alternative statistical methods for determining background levels may be submitted subject to Cabinet approval.

3.5 Deviations from Sampling Requirements

If soil samples cannot be collected as described in Sections 3.1, 3.2, 3.3, or 3.4, two (2) separate copies of an alternative sampling plan proposal shall be submitted to the UST Branch. The alternative sampling plan shall include the following information:

- an explanation as to why the standard sampling requirements cannot be followed;

- a scaled schematic or drawing of proposed sampling points; and

- any other information supporting the proposed alternative sampling plan.

Prior written approval from the UST Branch shall be obtained before the proposed alternative sampling plan is implemented.

4.0 WATER SAMPLE COLLECTION REQUIREMENTS

If water encountered during permanent closure activities is required to be sampled, two (2) separate copies of all sample analyses with chain-of-custody (COC) documentation shall be submitted as appendices or addenda to the CAR form. All water samples shall be placed into appropriate containers, preserved, and analyzed for applicable constituents as directed in Section 5.0.

4.1 Water Encountered During Permanent Closure

Sites with regulated petroleum UST systems shall collect water samples and dispose of the water if so prescribed in the Facility Classification Outline. If disposal of water is required, see Section 6.5.

For sites with regulated non-petroleum UST systems, collect a sample of any water (e.g. rain water, surface runoff, groundwater, etc.) encountered in the excavated tank pit or piping trench during and after the removal, or any water encountered in borings during closure in place and place each sample into an appropriate container for analysis. This water shall be disposed of properly (see Section 6.5) if proven contaminated or suspected to be contaminated.

4.2 Hydrogeologically Downgradient Groundwater Sampling

Sites with regulated petroleum UST systems shall collect a hydrogeologically downgradient groundwater sample if so prescribed in the Facility Classification Outline.

For sites with regulated non-petroleum UST systems, a hydrogeologically downgradient groundwater sample shall be collected if any of the following site-specific conditions occur:

- if bedrock is encountered and a soil sample from the bottom of the tank pit is not collected at the time of the tank or piping removal;
- if water encountered in the tank pit or piping trench during removal or in the bore holes during closure in place is found to be contaminated; or
- if water encountered in the tank pit, piping trench, or bore holes was not sampled at the time of permanent closure.

Downgradient groundwater sampling may be required to assess potential groundwater contamination associated with the permanent closure of a UST system. The downgradient groundwater samples shall be taken in the hydrogeologically downgradient area most likely to be affected by a release from the UST system. Groundwater samples shall be obtained from monitoring wells or UST assessment wells, and shall be collected, preserved, and analyzed in accordance with US EPA SW-846 methods.

If monitoring wells are installed, the installation shall be conducted by a certified monitoring well driller and must be installed in accordance with the Underground Storage Tank System Site Investigation Outline incorporated by reference in 401 KAR 42:060. A copy of the Kentucky Monitoring Well Record Form (DEP8043) indicating the AKGWA Well Number shall be submitted for each monitoring well installed. For information about the Kentucky

Monitoring Well Record Form (DEP8043), contact the Groundwater Branch, Division of Water, 14 Reilly Road, Frankfort, Kentucky 40601 or call (502) 564-3410.

UST assessment wells are wells that shall only be used to collect a one-time groundwater sample during permanent closure activities, and shall be constructed by a certified monitoring well driller. They may be constructed as an open borehole if the hole can be adequately purged to obtain a representative groundwater sample or by using a direct-push sampling device. A copy of the Kentucky Underground Storage Tank Assessment Well Form (5033/07/95) shall be submitted as an appendix to the CAR Form. Requirements for submittal of the Kentucky Monitoring Well Record Form (DEP8043) and well tagging do not apply to UST Assessment Wells.

UST assessment wells constructed as an open borehole shall be properly abandoned by grouting from bottom to top with neat cement, cement/bentonite, or bentonite within forty-eight (48) hours of drilling. UST assessment wells drilled using direct-push sampling devices shall be properly abandoned by grouting from bottom to top with neat cement, cement/bentonite, or bentonite immediately after obtaining a groundwater sample. Monitoring wells shall be properly abandoned within thirty (30) days of the last sampling date or the date of determination that the well is unsuitable for use as a monitoring well. Monitoring wells shall be properly abandoned in accordance with 401 KAR 6:310. UST assessment wells shall be properly abandoned by being sealed with cement/bentonite or bentonite from bottom to top, in a manner to prevent communication of surface water and groundwater through the boring and to prevent communication between two or more water-bearing zones through the boring.

If a hydrogeologically downgradient groundwater sample is required, documentation of the determination of the downgradient groundwater flow direction shall be submitted. The direction of groundwater flow is typically determined by obtaining static water levels from three (3) locations in a triangular configuration. The documentation to support the downgradient sample location shall include a site map depicting the exact locations of static water level measurements, the ground surface and water level elevation at each measurement location, the direction of groundwater flow, and the hydraulic gradient. Site maps shall be to scale, include a north arrow, and include a legend.

5.0 SAMPLE ANALYSIS REQUIREMENTS

Methods for sample collection, sample preservation, chain of custody (COC), sampling equipment, decontamination procedures, sample containers, sample sizes, and maximum sample holding times shall be conducted in accordance with 40 CFR 260.11, specifically, US EPA SW-846. Two (2) separate copies of the results of all sample analyses with COC documentation shall be submitted to the UST Branch as appendices to the CAR Form.

5.1 Required Methods for Analysis of Soil Samples

All soil samples shall be analyzed for applicable constituents as directed in Table A (page 13), (as specified by US EPA SW-846 analytical methods) for **all** contents stored at any time in the UST system(s) prior to permanent closure.

Refer to Section 1.2 for requirements associated with non-petroleum regulated UST system(s).

For regulated petroleum UST systems, analytical methods selected for determining compliance with the allowable levels specified in the Facility Classification Outline shall be capable of accurately measuring the constituents at or below allowable levels. The maximum acceptable reporting limit, specified in Table A, is not necessarily the required action

Table A

Analytical Requirements for Soil Samples

Product stored in UST System	Required Analysis	Acceptable Method	Maximum Acceptable Reporting Limit
Gasoline, Kerosene, or Jet Fuel	BTEX	Method 5030 in conjunction with SW-846 8240, 8260, 8020, or 8021	B: < 0.01 ppm T: < 0.7 ppm E: < 0.9 ppm X: < 5.0 ppm
Diesel or regulated Heating Oil	PAH	Method 3540 or 3550 in conjunction with SW-846 8100, 8270, or 8310	Ch: < 15 ppm B(a)A: < 0.15 ppm c PAH: < 0.3 ppm n PAH: < 3.0 ppm NAP: < 1.0 ppm
Waste Oil	PAH	Method 3540 or 3550 in conjunction with SW-846 8100, 8270, or 8310	Ch: < 15 ppm B(a)A < 0.15 ppm c PAH: < 0.3 ppm n PAH: < 3.0 ppm NAP: < 1.0 ppm
	Total Lead	SW-846 7420, 7421, or 6010	< 50 ppm or less than established background
New Oil	PAH	Method 3540 or 3550 in conjunction with SW-846 8100, 8270, or 8310	Ch: < 15 ppm B(a)A: < 0.15 ppm c PAH: < 0.3 ppm n PAH: < 3.0 ppm NAP: < 1.0 ppm
Other Petroleum or Non-Petroleum	Contact the UST Branch		

BTEX: Benzene, Toluene, Ethylbenzene, and Xylene (total)
PAH: Polynuclear Aromatic Hydrocarbons
Ch: Allowable level individually for Chrysene
B(a)A: Allowable level individually for Benzo(a)anthracene
c PAH: Maximum Acceptable Reporting Limit Individually for Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene
n PAH: Maximum Acceptable Reporting Limit Individually for Acenaphthene, Acenaphthylene, Anthracene, Benzo(ghi)perylene, Fluoranthene, Fluorene, Phenanthrene and Pyrene
NAP: Naphthalene
ppm: part per million (mg/kg)

level for the particular constituent. The need to perform corrective action, or to continue with the performance of corrective action, shall be determined by the level of the constituent that may be allowed to remain under the requirement of the Petroleum UST System Facility Classification Outline.

5.2 Required Methods for Analysis of Water Samples

All water samples shall be analyzed for applicable constituents as directed in Table B (page 15), (as specified by US EPA SW-846 analytical methods) for **all** contents stored at any time in the UST system(s) prior to permanent closure.

Refer to Section 1.2 for requirements associated with non-petroleum regulated UST system(s).

For regulated petroleum UST systems, analytical methods selected for determining compliance with the allowable levels specified in the Facility Classification Outline shall be capable of accurately measuring the constituents at or below allowable levels. The maximum acceptable reporting limit, specified in Table B, is not necessarily the required action level for the particular constituent. The need to perform corrective action, or to continue with the performance of corrective action, shall be determined by the level of the constituent that may be allowed to remain under the requirement of the Petroleum UST System Facility Classification Outline.

5.3 Additional Requirements

5.3.1 Sample Containers, Preservatives, Holding Times

All samples collected shall be placed into appropriate containers, and requirements for preservation and holding times shall be followed. Table C (page 16) is a limited summary of the appropriate containers, preservation techniques, and maximum holding times according to US EPA SW-846. Refer to SW-846 for additional information.

5.3.2 Laboratory Reports

All laboratory data sheets shall indicate the dates that a sample was collected, received, and analyzed; the sample extraction date (if required); the US EPA SW-846 method number(s) used; and the appropriate reporting limits. All laboratory reports shall follow US EPA SW-846 requirements.

5.3.3 Chain of Custody

A chain of custody (COC) is a history of the sample from the time of collection until its acceptance by a laboratory. This documentation shall be included with the results of all sample analyses submitted. COC procedures shall follow all US EPA SW-846 requirements. If COC procedures are not followed, the integrity of the sample is compromised and the analysis invalidated.

6.0 REQUIREMENTS FOR THE DISPOSAL AND REUSE OF MATERIALS RESULTING FROM PERMANENT CLOSURE

This section presents documentation requirements for the handling and disposal of various products and wastes that result from permanent closure activities. These products and wastes

Table B

Analytical Requirements for Water Samples

Product stored in UST System	Required Analysis	Acceptable Method	Maximum Acceptable Reporting Limit
Gasoline, Kerosene, or Jet Fuel	BTEX	Method 5030 in conjunction with SW-846 8240, 8260, 8020, or 8021	B: < 0.005 ppm T: < 1.0 ppm E: < 0.7 ppm X: < 10.0 ppm
Diesel or regulated Heating Oil	c PAH n PAH NAP	Method 3510 or 3520 in conjunction with SW-846 8100, 8270, or 8310	c PAH: < 0.005 ppm n PAH: < 3.0 ppm NAP: < 0.3 ppm
Waste Oil	c PAH n PAH NAP Total Lead	Method 3510 or 3520 in conjunction with SW-846 8100, 8270, 8310 SW-846 7420, 7421, or 6010	c PAH: < 0.005 ppm n PAH: < 3.0 ppm NAP: < 0.3 ppm < 0.015 ppm or less than established background
New Oil	c PAH n PAH NAP	Method 3510 or 3520 in conjunction with SW-846 8100, 8270, 8310	c PAH: < 0.005 ppm n PAH: < 3.0 ppm NAP: < 0.3 ppm
Other Petroleum or Non-Petroleum	Contact the UST Branch		

BTEX: Benzene, Toluene, Ethylbenzene, and Xylene (total)
PAH: Polynuclear Aromatic Hydrocarbons
c PAH: Maximum Acceptable Reporting Limit Individually for Benzo(a)pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene
n PAH: Maximum Acceptable Reporting Limit Individually for Acenaphthene, Acenaphthylene, Anthracene, Benzo(ghi)perylene, Fluoranthene, Fluorene, Phenanthrene, and Pyrene
NAP: Naphthalene
ppm: part per million (mg/l)

Table C

Appropriate Containers, Sample Sizes, Preservation Techniques and Maximum Holding Times*

Parameter	Container Type	Sample Size	Preservation Method	Holding Times (Maximum)
Volatile Organics for Soil (BTEX)	Wide-mouth glass w/ Teflon-lined cap	120 ml or 4 oz.	Cool to 4°C	14 days
Volatile Organics for Water (BTEX)	Two (2) clear glass w/ Teflon-lined cap (VOA)	40 ml or 1 oz.	Add four drops of HCl to ea., Cool to 4°C	14 days
Polynuclear Aromatic Hydrocarbons for Soil (PAH)	Wide-mouth glass w/ Teflon-lined cap	250 ml or 8 oz.	Cool to 4°C	14 days until lab extraction 40 days after lab extraction
Polynuclear Aromatic Hydrocarbons for Water (PAH)	Amber glass w/Teflon-lined cap	1 liter	Cool to 4°C	7 days until lab extraction 40 days after lab extraction
Total Lead for Soil	Wide-mouth glass w/ Teflon-lined cap	500 ml or 16 oz.	Cool to 4°C	180 days
Total Lead for Water	Plastic or glass	500 ml or 16 oz.	Add HNO3 until pH is less than 2, cool to 4°C	180 days
Volatile Organics for Sludge (TCLP)	Wide-mouth glass w/ Teflon-lined cap	120 ml or 4 oz.	Cool to 4°C	14 days until lab extraction 14 days after lab extraction
Acid/Base/Neutral for Sludge (TCLP)	Wide-mouth glass w/ Teflon-lined cap	120 ml or 4 oz.	Cool to 4°C	14 days (hold) 7 days until lab extraction 40 days after lab extraction
Metals for Sludge (TCLP)	Wide-mouth glass w/ Teflon-lined cap	500 ml or 16 oz.	Cool to 4°C	180 days until lab extraction 180 days after lab extraction
Mercury for Sludge (TCLP)	Wide-mouth glass w/ Teflon-lined cap	500 ml or 16 oz.	Cool to 4°C	28 days until lab extraction 28 days after lab extraction

* FOR FURTHER INFORMATION REFER TO US EPA SW-846 PUBLICATION.

shall be handled and disposed of properly in accordance with 401 KAR Chapters 30-49 as applicable. If wastes are hazardous, additional requirements pertaining to disposal, manifesting, registration, etc. shall be addressed in accordance with 401 KAR Chapters 30-40 as applicable. For more information contact the Hazardous Waste Branch, Division of Waste Management, 14 Reilly Road, Frankfort, KY 40601, or call (502) 564-6716.

Two (2) separate copies of all disposal documentation shall be submitted to the UST Branch as appendices or addenda to the CAR Form.

6.1 Tank Contents

All tank contents are considered a waste unless they are transported directly to a permitted recycling facility, or unless the contents removed are product which can be used without any processing or treatment. If the recycling facility can only accept a portion of the tank contents (i.e. product/water mixture) removed from the tank, all unaccepted tank contents (i.e. accumulated water, product/water mixture, and bottom sediments) not accepted by a permitted recycling facility shall be considered a waste and subject to hazardous waste determination. A listing of permitted recycling facilities may be obtained by contacting the Hazardous Waste Branch, Division of Waste Management, 14 Reilly Road, Frankfort, KY 40601 or by calling (502) 564-6716. Note that recycling does not include processing the tank contents through an oil/water separator.

Documentation of the proper handling of the tank contents shall include a receipt from the recycling facility that contains the following information:

- the UST facility ID number(s) designating the location of the UST system from which tank contents were removed;
- a complete description of the tank contents submitted for recycling;
- the amount of tank contents (gallons or pounds) submitted (per tank) for recycling; and
- the complete name and location of the receiving facility and all permit numbers of the receiving facility in effect the date tank contents were received.

6.2 Residual Tank Materials

All residual tank materials are considered a waste and are subject to hazardous waste determination. The hazardous waste determination shall be conducted in accordance with 401 KAR Chapter 32:010, Section 2.

Hazardous wastes that are generated during permanent closure activities and removed from the site shall be disposed of at a permitted hazardous waste treatment, storage, or disposal (TSD) facility and, quantity dependent, shall be hauled by a registered hazardous waste transporter. Any UST facility that generates hazardous waste during permanent closure activities shall register with the Hazardous Waste Branch of the Division of Waste Management and shall comply with the requirements of 401 KAR Chapter 32. For information about hazardous waste pretreatment requirements and accumulation time, certified hazardous waste transporters, permitted hazardous waste disposal facilities, and procedures for one-time generators contact the Hazardous Waste Branch, Division of Waste Management at 14 Reilly Road, Frankfort, Kentucky 40601 or call (502) 564-6716.

If the residual tank materials are determined to be hazardous, documentation of proper transport and disposal shall include the following information:

- documentation of the hazardous waste determination conducted in accordance with 401 KAR 32:010, Section 2;
- a complete waste manifest (hazardous or non-hazardous as appropriate) including all required signatures and both the TSD's and generator's EPA ID numbers; and
- a receipt from the TSD which shall include the following information:
    - the UST facility ID number designating the location of the UST system from which residual tank materials were removed;
    - a complete description of the waste and the waste identification;
    - the exact volume of the waste generated (volume determines generator status); and
    - the complete name and location of the receiving facility and all permit numbers of the receiving facility in effect the date the residual tank materials were received.

If the residual tank materials are determined to be non-hazardous waste, documentation of proper disposal shall include the following information:

- documentation of the waste determination conducted in accordance with 401 KAR 32:010, Section 2, indicating the waste to be non-hazardous; and
- a complete non-hazardous waste manifest or receipt which contains the following details:
    - the UST facility ID number designating the location of the UST system from which residual tank materials were removed;
    - a complete description of the waste;
    - the volume of the waste generated; and
    - the complete name and location of the receiving facility and all permit numbers of the receiving facility in effect the date residual tank materials were received.

6.3 Cleaning Liquids and Cleaning Materials

Any liquid or solid material used to clean a UST system, whether relating to removal or closure in place, is considered a waste and subject to hazardous waste determination. Refer to Section 6.2 for general information on waste determination, transportation, and disposal.

If the cleaning liquids or cleaning materials are determined to be hazardous, documentation of proper transport and disposal shall include the following information:

- documentation of the hazardous waste determination conducted in accordance with 401 KAR 32:010, Section 2;

- a complete waste manifest (hazardous or non-hazardous as appropriate) including all required signatures and both the TSD's and generator's EPA ID numbers; and

- a receipt from the TSD which shall include the following information:

    - the UST facility ID number designating the location of the UST system from which cleaning liquids or cleaning materials were removed;

    - a complete description of the waste and the waste identification;

    - the exact volume of the waste generated (volume determines generator status); and

    - the complete name and location of the receiving facility and all permit numbers of the receiving facility in effect the date cleaning liquids or cleaning materials were received.

If the cleaning liquids or cleaning materials are determined to be a non-hazardous waste, documentation of proper disposal shall include the following information:

- documentation of the waste determination conducted in accordance with 401 KAR 32:010, Section 2 indicating the waste to be non-hazardous; and

- a complete non-hazardous waste manifest or receipt which contains the following details:

    - the UST facility ID number designating the location of the UST system from which cleaning liquids or cleaning materials were removed;

    - a complete description of the waste;

    - the volume of the waste generated; and

    - the complete name and location of the receiving facility and all permit numbers of the receiving facility in effect the date cleaning liquids or cleaning materials were received.

6.4 Tank or Piping Disposal

Documentation of the disposal of a removed tank(s) or piping shall include the following information:

- If the tank(s) or piping is disposed of at a scrap metal company or a landfill, a receipt from the receiving facility shall be submitted. This receipt shall be signed by the receiving facility and shall include the receiving facility's name, address, and phone number, as well as the name of the UST facility, the UST facility ID number, the location address, the number of tank(s) or piping, and the size of the tank(s) (if applicable);

- If the tank(s) or piping is not disposed of at a scrap metal company or a permitted landfill, a bill of sale from the individual or facility receiving the tank or piping shall be submitted. This bill of sale shall indicate that the individual or facility accepts responsibility for the tank or piping and acknowledges that its use will be in compliance with regulatory requirements. This document shall be signed by the individual or facility receiving the tank or piping and shall indicate the receiving individual or facility name, address, and telephone number, as well as the UST facility ID number of the UST site where the tank or piping was removed and a listing of all content(s) stored at any time in the tank(s). If an empty UST is sold and transported to an off-site facility, the receiving facility may become a generator of hazardous waste if and when any remaining residues are removed from the UST. A suggested model of a bill of sale is included as Figure D on page 21.

- If the tank(s) is to be reused as an aboveground tank for storage of a flammable substance, a permit of approval from the State Fire Marshal's (SFM) office is required. Applications for this permit will be considered by the SFM if the tank manufacturer provides information confirming the structural integrity of the tank(s) for use as an aboveground storage tank. Contact the SFM at (502) 564-3626 regarding the application for reuse of a UST as an aboveground storage tank; or

- If the tank(s) is to be reused for any other purpose contact the SFM office at (502) 564-3626.

- For tanks closed in place, indicate the type of inert solid (e.g. sand, concrete) used to fill the tank after any emptying or cleaning.

- For piping closed in place, indicate that the piping has both ends capped after any emptying or cleaning.

In accordance with the American Petroleum Institute (API) Recommended Practice 1604, removed tanks shall not be used for subsequent storage of food or liquids intended for animal or human consumption.

If a UST removed from the ground is not to be cleaned at the location where the UST was removed, the UST shall be empty as defined in 401 KAR 42:070 Section 1. Figure E (page 22) illustrates the minimum requirements of a certification that shall be completed and submitted to the UST Branch if a UST is removed from a site prior to cleaning. If an empty UST is sold and transported to an off-site facility, the receiving facility may become a generator of hazardous waste if and when any remaining residues are removed from the UST.

Figure D

Removed Underground Storage Tank(s) Bill of Sale

I _____ acknowledge purchase of the following underground storage tank(s):

Tank #	Tank Size	Date Tank Removed	All Products Ever Stored in Tank(s)

The above referenced tank(s) was removed from the following facility:

Name_____

Address_____

_____

UST Facility ID#_____

The tank(s) will now be located at the following site:

Name_____

Address_____

_____

Phone#_____

The intended use for the tank(s) is: _____

As the new tank(s) owner, I understand that I accept responsibility for the tank(s) and acknowledge that its use will be in compliance with regulatory requirements. I also understand that in accordance with API Recommended Practice 1604, removed underground storage tank(s) must not be used for subsequent storage of food or liquids intended for animal or human consumption. I understand that I may become a generator of hazardous waste if and when any remaining residues are removed from the underground storage tank(s).

New Owner Signature _____ Address _____

Printed Name _____ _____

Date Signed _____ Phone # _____

Figure E

Certification of Empty Tank(s)

This certification, or a comparable document containing the following information, shall be completed and submitted when a removed underground storage tank(s) is transported offsite prior to being cut up or destroyed:

Facility Name: _____

Facility Address: _____

_____

UST Facility ID#: _____

Number of underground storage tank(s) removed: _____

I certify that the underground storage tank(s) removed from the above referenced facility on _____ _____ (date) had all materials from each underground storage tank system removed using commonly employed practices so that no more than 2.5 centimeters (one (1) inch) of residue, or 0.3 percent by weight of the total capacity of the UST system, remained in the system when transported offsite from this facility on _____ (date) and ,therefore, met the definition of empty as per Kentucky Administrative Regulation 401 KAR 42:070 Section 1.

Signature _____

Printed Name _____

Title _____

Date _____

6.5 Water Encountered in Excavation

Sites with regulated petroleum UST systems shall dispose of pit water as prescribed in the Facility Classification Outline.

Water encountered in the excavation during removal of the tank(s) or piping, or in borings drilled during closure in place, that is proven to be contaminated or that is suspected to be contaminated shall be disposed of properly as indicated in Section 4.1.Disposal shall be documented in one of the following manners:

- If the treated water is to be discharged rather than taken to a registered facility, submit a copy of the one-time Kentucky Pollutant Discharge Elimination System (KPDES) water discharge permit obtained from the Industrial Synfuel Section of the Kentucky Division of Water. For more information call the Division of Water at (502) 564-3410;

- If the water is recovered by a permitted facility, submit a receipt from the receiving facility; or

- If the water from the excavated pit is to be disposed of by discharging into the sanitary or storm sewer system, submit a copy of the letter of approval or permit (if issued by the sewer district) from the sewer district.

Any permit, receipt, or letter documenting the disposal of contaminated water shall include the amount of water disposed of, the UST facility ID number of the site from which the water originated, and any analytical results required for disposal.

6.6 Excavated Material

The Facility Classification Outline provides information regarding excavated material generated during permanent closure of petroleum UST systems for each closure classification.

Submit a single receipt indicating the total amount of excavated material or individual receipts documenting the total amount of excavated material accepted by a disposal facility (e.g. landfill or landfarm). See Section 3.3 (Sampling of Excavated Material) for documentation to be submitted if the excavated material is to be returned to the excavation or used for an unrestricted off-site purpose. To obtain a list of approved landfills and/or landfarms that accept contaminated soil in Kentucky, contact the Solid Waste Branch, Division of Waste Management, 14 Reilly Road, Frankfort, Kentucky 40601 or call (502) 564-6716.

Excavated material generated during the permanent closure of regulated UST systems containing substances other than petroleum products is subject to a hazardous waste determination.